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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO
09/677,203	10/02/2000	Michael J. Natan	PSU 002182C	5080

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EXAMINER
SMITH HICKS, ERICA D

ART UNIT	PAPER NUMBER
1741	11

DATE MAILED: 06/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/677,203	Applicant(s) NATAN ET AL.	
	Examiner Erica Smith-Hicks	Art Unit 1741	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 0200* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *10-36* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4,5,8,9* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Claims 10-36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 13.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by CARUSO et al. WO 99/47253.

Claim 1 is rejected because CARUSO et al. teach a method for manufacturing free standing segmented nanoparticles by the deposition of a plurality of materials inside a template (page 4, lines 19-28) comprising: providing a template and depositing first and second materials in the pores thereof (page 4, line 30 through page 5, line 4 and page 11, line 25 through page 12, line 10) and releasing the segmented particles from the template (page 11, lines 26-28).

Claim 2 is rejected because CARUSO et al. teach the method wherein the segmented nanoparticle has a length from 10 nm -50 μm and width of 5 nm-50 μm on pg. 5, lines 5-9, claims 7, 8, 11 and pg. 11, lines 4-9 of the reference.

Claim 3 is rejected because CARUSO et al. teach the method wherein the segmented nanoparticle is comprised of 2-50 segments, specifically more than one segment taught on page 3, lines 17-20; page 4, lies 20-29 and page 7, lines 20-25.

Claims 4-6 are rejected because CARUSO et al. teach the method wherein the first and second materials are selected from the group consisting of a metal, metal oxide, gold, silver, palladium, metal selenide, metal nitride, inorganic, organic and biological materials as disclosed by the prior art on page 6, lines 25-32 and page 7, lines 1-10.

Claim 7 is rejected because CARUSO et al. teach the method wherein the template is selected from the group consisting of a porous polycarbonate membrane or copolymer on page 10, lines 10-15 and page 11, lines 25-27.

4. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by SATO et al., US 5,997,958.

Claim 1 is rejected because SATO et al. teach a method for manufacturing free standing segmented nanoparticles by the deposition of a plurality of materials inside a template (col. 2, line 60 through col. 3, line 8) comprising: providing a template and depositing first and second materials in the pores thereof (claims 1 and 25-27) and releasing the segmented particles from the template (col. 3, lines 18-20).

Claims 2 and 3 are rejected because SATO et al. teach the method wherein the segmented nanoparticle has a length from 10 nm -50 μm (specifically in the range of 1-15 μm) and width of 5 nm-50 μm (specifically in the range from 30 nm to 2 μm) and the length of the overall segment between 50 nm -15 μm at col. 7, lines 20-45 and claims 17, 25 and 27 of the reference.

Claims 4-6 are rejected because SATO et al. teach the method wherein the first and second materials are selected from the group consisting of a metal, metal oxide, gold, silver, palladium, metal selenide, metal nitride, inorganic, organic and biological materials as disclosed by the prior art at col. 3, lines 25-30 and col. 8, lines 26-35.

Claim 7 is rejected because SATO et al. teach the method wherein the template is selected from the group consisting of a photolithography prepared template (col. 7, lines 30-66).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 8 and 9 are rejected under 35 U S.C. 103(a) as being unpatentable over CARUSO et al. and SATO et al. as applied to claims 1-7 above, and further in view of MONTGOMERY, US 6,093,302.

CARUSO et al., or SATO et al. are as applied, argued and disclosed above and incorporated herein. While the above primary references suggest various methods for depositing the nanoparticle materials, they fail to expressly teach placement of first and second materials on the template by an electrochemical technique.

This teaching is provided by MONTGOMERY who teaches a combinatorial synthesis technique wherein free standing nanoparticles are formed by electrochemical deposition of first and second materials on a substrate template at col. 5, lines 23-50.

CARUSO et al. and MONTGOMERY or SATO et al., and MONTGOMERY in combination teach all of the limitations of applicants' claims 8 and 9 and are combinable as they are from the same technology area of combinatorial synthesis of nanoparticles.

It would have been obvious to a person of skill in the art at the time of the invention to have employed the electrochemical deposition technique taught by MONTGOMERY in the nanoparticle formation process of CARUSO et al. or SATO et al. because MONTGOMERY has shown that employing an electrochemical deposition would have significantly enabled selective deposition through allowing for the placement of material at a specific locations on the substrate template. This selective deposition would have prevented chemical cross-talk associated with excess material placement in non-desired areas, further affording for a more sufficient production and cost-effective rapid synthesis of an array of separately formed nanoparticles.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5,547,748 to RUOFF et al. who teach a method for encapsulating ferromagnetic and paramagnetic (such as Fe, Co, Ni) metals in a nanopolyhedron for forming separate nanoparticles; BLACK et al. US 6,162,532 who disclose a method for forming ferromagnetic and paramagnetic nanoparticles of substantially uniform diameter upon a substrate template using selective site deposition; and MATHIOWITZ et al. US 6,143,211 who disclose a method for forming nanoparticles through phase inversion phenomena.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica Smith-Hicks whose telephone number is 703/ 305-7645. The examiner can normally be reached Tue-Fri., from 8:00 a.m.-6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 703/ 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are 703/ 872-9310 for regular communications and 703/ 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703/ 308-0661.

NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Erica Smith-Hicks
Examiner
Art Unit 1741

ESH
June 26, 2002